Potential Use of DRAFT Metedeconk Watershed Model Stormwater Management Ordinance to Amend NJAC 7:8 Nonstructural Rules

Stakeholder Meetings

November 29 & 30, 2016

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Intent and Purpose

- Current non-structural “strategies” are goals, not standards
- Inherently difficult to objectively assess and measure
- Result has been inconsistent and ineffective

OBJECTIVE Alternative?

Green Infrastructure

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Model LID Ordinance Outline

- GI used to meet all three standards, then LID standard is met, OR
- "Take your chances" with current non-structural strategies incorporated to the "maximum extent practical"

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Proposed Two Tiered GI Approach

1. Decentralized GI for Water Quality and Groundwater Recharge
2. Tier 1 GI plus optional large scale Tier 2 GI for Quantity

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Tier 1 GI

- Decentralized
- Small scale or limited contributory drainage area
- Required for Water Quality and Groundwater Recharge
- Optional for Water Quantity

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Tier 1

- Rain Gardens
- Small Scale Infiltration (< 1 acre DA)
- Pervious Paving
- Cisterns/Rain Barrels
- Green Roofs
- Dry Wells
- Vegetated Filter Strips
- Wooded/Reforested Retention Areas
- Stormwater/Downspout Planters
- Green Streets/Tree Filter Boxes
- Bioswales/Islands

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Tier 2 GI

- Larger scale
- Unlimited contributory drainage area
- Optional for Water Quantity
- Not for Water Quality and/or Recharge

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Tier 2

- Infiltration (unrestricted DA)
- Constructed Wetlands
- Bioretention
- Blue Roofs
- Wet Ponds (with 50% native edge and rainwater capture for reuse)

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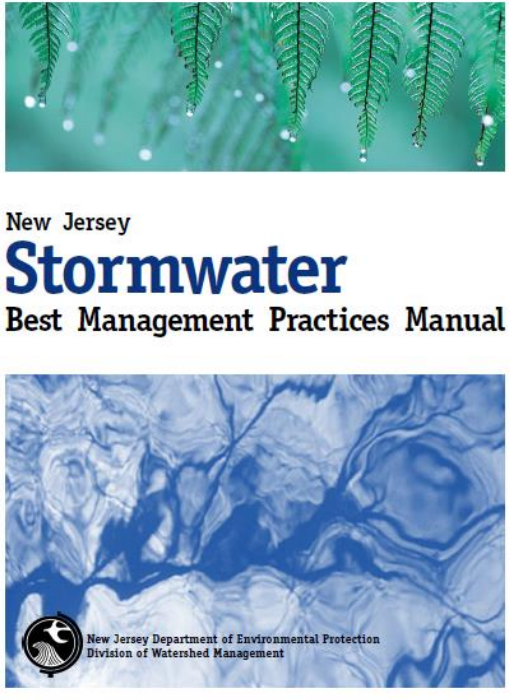
GI will be as defined in BMP

- Chapter 9
- Chapter 10 (draft)
- New Chapters



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All GI SWM Must "Count"

- Recognize ALL types of GI stormwater management strategies contribute toward LID
- Allow routing with the design infiltration rate
  - BMP App. E design rate (i.e. FOS = 2)
- Apply reduced curve number method (MD, McCuen, R. MDE, 1983) for ALL design storm events including 100 year

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Reduced Curve Number Method

(McCuen R., MDE, 1983)

$$CN^{*} = \frac{200}{(P + 2Q + 2) - \sqrt{5PQ + 4Q^{2}}}$$

$$Q_P = \frac{(P - 0.2S)^2}{(P + 0.8S)} \qquad \text{(Equation 2.3, TR-55, USDA NRCS 1986)}$$

$$S = (1000/RCN) - 10 \quad \text{(Equation 2-4, TR-55)}$$

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Reduced Curve Number Method

- Allows GI to be consistently modeled
  - CN* = Adjusted curve number
  - P = Rainfall depth in design storm
  - $Q = Q_P - Q_{GI}$
  - Q_P = Post development runoff depth
  - Q_{GI} = Equivalent runoff depth stored in GI (GI volume/tributary area)

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Summary

- GI as alternative to nonstructural strategies
- Objective vs. Subjective
- Predictable, repeatable results
- GI fully count toward stormwater management compliance

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On-site Retention (volume management)

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Volume of stormwater infiltrated by a GI BMP

Volume of stormwater treated by infiltrating through a GI BMP with a vegetated permeable soil layer

Volume of stormwater captured for beneficial reuse in a GI BMP

Volume of stormwater permanently retained in a GI BMP

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Green Infrastructure BMPs (draft NJ BMP Chapter 10)

- Dry Wells
- Pervious Paving Systems
- Vegetated Filter Strips
- Grass Swales
- Rain Gardens
  - Planter boxes
- Green Roofs
- Cisterns

When used to treat runoff close to the source:

- Bioretention
  - Bioswales
- Infiltration
- Sand Filters designed to infiltrate